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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,164	11/13/2003	Hyoung-Rae Kim	SAM-0504	8205
7590	08/15/2007	EXAMINER DHARIA, PRABODH M		
Steven M. Mills MILLS & ONELLO LLP Suite 605 Eleven Beacon Street Boston, MA 02108		ART UNIT 2629	PAPER NUMBER	
		MAIL DATE 08/15/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,164	KIM, HYOUNG-RAE	
Examiner	Art Unit		
Prabodh M. Dharia	2629		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 25 June 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 1-8 is/are allowed.

6) Claim(s) 9-13 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 13 November 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06-25-07.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application

6) Other: ____ .

1. **Status:** Please all replies and correspondence should be addressed to examiner's new art unit 2629. Receipt is acknowledged of papers submitted on 06-25-2007 under amendments, which have been placed of record in the file. Claims 1-13 are pending in this action.

Response to Amendment

2. The amendment filed 06-25-2007 do not introduce nay new matter into the disclosure. The added material, which is supported by the original disclosure.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirai et al. (US 5,953,002).

Regarding Claim 9, Hirai et al. discloses a driving method of a super twisted nematic (STN) liquid crystal display (LCD) driver (Col. 1, Lines 49-51), the driving method comprising: (a) determining whether a frame rate control (FRC) selection signal is in accordance with an nFRC method (Col. 9, Line 56 to Col. 10, Line 11); (b) counting the number of sub frames (please see figures 4, 5 Col. 14, Lines 28-52); and (c) generating a liquid crystal polarity inversion signal that inverts a polarity of the STN LCD if the number of sub frames is n (please

see figures 4, 5 Col. 14, Lines 28-52, Col. 19, Lines 22-60, Col. 9, Line 56 to Col. 10, Line 11, Col. 13, Lines 63-65, Col. 31, Lines 64-66, Col. 32, Lines 20-27, Lines 41-54, discloses every frame voltages are inverted which are applied across liquid crystal); LCD (Col. 1, Lines 49-51), comprising a sub frame counter (please see figures 4, 5 Col. 14, Lines 28-52), which counts the number of sub frames in response to a clock signal (please see figures 4, 5 Col. 14, Lines 28-52), and receives flag signal from the sub-frame counter (please see figures 4, 5 Col. 14, Lines 28-52), and receives flag signal from the sub-frame counter (please see figures 4, 5 Col. 14, Lines 28-52), a frame which receives a frame rate control (FRC) selection signal to process display data for a moving image displayed on a display panel (please see figures 4, 5 Col. 14, Lines 28-52, Col. 19, Lines 22-60, Col. 9, Line 56 to Col. 10, Line 11, Col. 13, Lines 63-65, Col. 31, Lines 64-66, Col. 32, Lines 20-27, Lines 41-54, discloses every frame voltages are inverted which are applied across liquid crystal).

Regarding Claim 10, Hirai et al. teaches (d) receiving data (please see figures 8,9, Col. 31, Lines 1-8) and, in response to the level of the liquid crystal polarity inversion signal, generating a segment voltage that drives a column electrode of the STN LCD (please see figures 4, 5 Col. 14, Lines 28-52, Col. 19, Lines 22-60, Col. 9, Line 56 to Col. 10, Line 11, Col. 13, Lines 63-65, Col. 31, Lines 64-66, Col. 32, Lines 20-27, Lines 41-54, discloses every frame voltages are inverted which are applied across liquid crystal); and (f) receiving a row selection signal and, in response to the level of the liquid crystal polarity inversion signal, generating a com voltage that drives a row electrode of the STN LCD (Col. 14, Lines 28-52, Col. 19, Lines

22-60, Col. 9, Line 56 to Col. 10, Line 11, Col. 13, Lines 63-65, Col. 31, Lines 64-66, Col. 32, Lines 20-27, Lines 41-54).

Regarding Claim 11, Hirai et al. teaches n sub frames constitute one frame (Col. 9, Line 65 to Col. 10, Line 4).

Regarding Claim 12, Hirai et al. teaches a driving method of a super twisted nematic (STN) liquid crystal display (LCD) (Col. 1, Lines 49-51) driver using an nFRC (Col. 9, Line 56 to Col. 10, Line 11 number frames are arbitrary as n) method, wherein a polarity of the STN LCD is inverted in each frame (Col. 13, Lines 63-65, Col. 31, Lines 64-66, Col. 32, Lines 20-27, Lines 41-54, discloses every frame voltages are inverted which are applied across liquid crystal).

Regarding Claim 13, Hirai et al. teaches one frame is comprised of n sub frames (Col. 9, Line 65 to Col. 10, Line 4, discloses the total number of sub-frame depend on gray scale required to be displayed, sub-frame, sub-field or sub-periods are generated to increase the resolution and display quality by displaying larger number of gray scales).

Response to Arguments

5. Applicant Applicant's arguments, see remark, filed, with respect to the rejection(s) of claim(s) 9 and 12 under 35 U.S.C. 103(a) as being unpatentable over Morita (US 2002/0196243 A1) in view of Tajima et al. (US 6,249,265 B1) regarding have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hirai; Yoshinori et al. (US 5,953,002 A). Please also see other prior art site on 892's discloses threshold voltage obtaining unit.

6. Applicant's arguments, see remark, filed on 06-25-2007, with respect to the rejection(s) of claim(s) 1 and 5 have been fully considered and are persuasive. The Non-Final rejection of 02-08-2007 has been withdrawn.

Allowable Subject Matter

7. Claims 1-8 are allowed.

8. The following is an examiner's statement of reasons for allowance:

Applicant's arguments filed on 06-25-2007; are convincing. As argued by applicant in remarks under claim rejection page 8, last two paragraphs and pages 9-14; the prior art of Morita (US 2002/0196243 A1), Tajima et al. (US 6,249,265 B1), Hirai; Yoshinori et al. (US 5,953,002 A) and Yasunishi; Norio (US 6,094,243 A) fails to recite or disclose the uniquely distinct features represented by underlined bold claim below; in combination with all the other recited limitations in independent claim 1;

a sub frame counter, which counts a number of sub frames in a frame in response to a clock signal and generates a sub frame flag signal every time each sub frame is counted in the frame; an N clock counter, which receives an N-line signal and generates an N-line flag signal every time the number of N-lines counted is N in response to the clock signal; a

frame counter, which receives a frame rate control (FRC) selection signal, counts the number of the sub frame flag signals received from the sub frame counter, and generates a frame flag signal every time the number of the sub frame flag signals counted is n; and a liquid crystal polarity inversion signal generator, which selects one of the sub frame flag signal and the N-line flag signal, in response to a selection signal, and further selects the frame flag signal which inverts a level of a liquid crystal polarity inversion signal in the frame, and generates the liquid crystal polarity inversion signal that inverts a polarity of an STN liquid crystal of the STN LCD in the frame.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Iino; Shoichi et al. (US 6,483,497 B1) Matrix display with signal electrode drive having memory.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prabodh M. Dharia whose telephone number is 571-272-7668.

The examiner can normally be reached on M-F 8AM to 5PM.

11. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231



Prabodh Dharia

Full Signatory Authority Program

AU2629

08-07-2007